

REMARKS

Claims 1-20 are pending in this application. By this Amendment, claims 1 and 4 have been amended and claims 9-20 have been added. Claims 1, 4, 9 and 20 are independent. Reconsideration of the application is respectfully requested.

I. Amendment

Support for the amendment to claims 1 and 4 can be found in the specification at, for example, page 20, line 26 - page 21, line 19. Support for new claim 9 can be found in the specification at, for example, page 7, line 23 - page 8, line 8 and original claim 4. Support for new claim 10 can be found in the specification at, for example, page 14, lines 6-13. Support for claim 11 can be found in the specification at, for example, page 15, line 35 - page 16, line 7. Support for new claim 12 can be found in the specification at, for example, page 17, lines 1-24. Support for new claims 13 and 14 can be found in the specification at, for example, page 17, line 25 - page 18, line 8. Support for new claim 15 can be found in the specification at, for example, page 18, lines 9-19. Support for new claims 16 and 17 can be found in the specification at, for example, page 18, line 20 - page 19, line 4. Support for new claim 18 can be found in the specification at, for example, page 19, lines 5-23. Support for new claim 19 can be found in the specification at, for example, page 19, line 24 - page 20, line 8. Support for new claim 20 can be found in the specification at, for example, page 20, line 9 - page 22, line 14. Thus, no new matter is added.

II. The Claims Define Patentable Subject Matter

The Office Action rejects claim 1 under 35 U.S.C. §102(b) over U.S. Patent No. 5,395,803 to Adams; rejects claims 1, 2, 4 and 5 under 35 U.S.C. §102(b) over U.S. Patent Publication No. 2002/0041929 to Magne; rejects claims 1, 2, 4 and 5 under 35 U.S.C. §102(b) over U.S. Patent No. 6,352,747 to Blackburn et al. (Blackburn); rejects claims 3 and

6-8 under 35 U.S.C. §103(a) over Magne; and rejects claims 3 and 6-8 under 35 U.S.C. §103(a) over Blackburn. These rejections are respectfully traversed.

Independent claim 1 recites, *inter alia*, "dripping the coating liquid in a ring shape in a vicinity of an outer circumference on the coating surface of the object to be coated," "dripping the coating liquid in a spiral shape toward a geometrical center or an optical center of the object to be coated from the vicinity of the outer circumference" and "a number of rotations of the object to be coated at a time of dripping the coating liquid in the ring shape, is set to be a smaller value than a number of rotations of the object to be coated at a time of dripping the coating liquid in the spiral shape." Independent claim 4 recites similar subject matter. The applied references fail to teach or render obvious the recited features of independent claims 1 and 4.

A. Advantages of the Present Application

By dripping the coating liquid in a ring shape in the vicinity of an outer circumference on the coating surface of the object to be coated, the coating liquid can be uniformly applied, without leaving an uncoated area, in the vicinity of the outer circumference of the object to be coated.

By dripping the coating liquid in a spiral shape toward a geometrical center or an optical center of the object to be coated from the vicinity of the outer circumference, even in a case that the coating surface of the object to be coated has a curved convex shape upward, there is a difference in this curved convex shape, a spherical surface or an aspherical surface, so that the coating liquid can be uniformly applied on the coating surface of the object to be coated.

Thus, even in a case that the viscosity of the coating liquid is high, a thick coating film can be uniformly coated, without leaving an uncoated area, in the vicinity of the outer

circumference of the coating surface of the object to be coated and inside of it. See page 4, line 9 to page 5, line 4 of the specification.

Furthermore, by having the number of rotations of the object to be coated at the time of dripping the coating liquid in the ring shape, set to a smaller value than the number of rotations of the object to be coated at the time of dripping the coating liquid in the spiral shape, a speed of the object to be coated relative to the nozzle when the coating liquid is dripped in the ring shape, can be set to a smaller value than a case where the number of rotations of the two dripping steps is set to be the same. Thus, when the coating liquid is dripped in the ring shape, it is possible to prevent a state that the coating liquid dripped on the object to be coated does not adhere to the object to be coated and is splashed, because the relative speed is great.

B. Adams

The Examiner relies on col. 3, lines 4-21 of Adams for corresponding to the present application. Adams recites process utilizes the commencement of deposition at the edge of the wafer, a spiral-like deposition proceeding toward the center of the wafer. See col. 3, lines 4-8 of Adams.

It appears that the Examiner divides this description into two parts, including 1) the commencement of deposition at the edge of the wafer, and 2) a spiral-like deposition proceeding toward the center of the wafer. It appears that the Examiner alleges that the part 1 corresponds with the ring shape dripping step and part 2 corresponds with the spiral shape dripping step.

However, col. 3, lines 10-11 of Adams recites that the deposition commences at point 51 located near periphery of the wafer.

Thus, it appears that the part 1 does not show the features for the ring shape dripping step, but simply shows that the deposition starts from an edge of the wafer, when a resist is

deposited in a spiral shape because FIG. 4 of Adams discloses a structure for depositing the resist in the spiral shape from the edge of the wafer to the center of the wafer. However, FIG. 4 does not disclose a structure for depositing the resist in the ring shape at the edge of the wafer.

Thus, Adams fails to teach or render obvious dripping the coating liquid in a ring shape in the vicinity of an outer circumference on the coating surface of the object to be coated, dripping the coating liquid in a spiral shape toward a geometrical center or an optical center of the object to be coated in the vicinity of the outer circumference and the number of rotations of the object to be coated at the time of dripping the coating liquid in the ring shape, is set to be a smaller value than the number of rotations of the object to be coated at the time of dripping the coating liquid in the spiral shape.

C. Magne

The Office Action relies on paragraphs [0051], [0060] and [0078] of Magne for corresponding with the present application.

Namely, paragraph [0051] of Magne discloses the rotation of substrate 4. Also, paragraphs [0060] and [0078] disclose a point that spray nozzle 1 is moved in a radial direction of the substrate 4. From these paragraphs, Magne discloses a structure for spraying a liquid coating composition in the spiral shape over the substrate 4 from the spray nozzle 1.

However, Magne does not disclose a structure for spraying the liquid coating composition in the ring shape in the vicinity of the outer circumference of the substrate 4. Thus, Magne fails to teach or render obvious dripping the coating liquid in a ring shape in the vicinity of an outer circumference on the coating surface of the object to be coated, dripping the coating liquid in a spiral shape toward a geometrical center or an optical center of the object to be coated in the vicinity of the outer circumference and the number of rotations of the object to be coated at the time of dripping the coating liquid in the ring shape, is set to be

a smaller value than the number of rotations of the object to be coated at the time of dripping the coating liquid in the spiral shape.

D. Blackburn

The Office Action relies on col. 3, lines 36-39 of Blackburn for corresponding with the present application. In col. 3, lines 36-39, Blackburn recites the procedure of the previous embodiment is followed except that dispensing of the coating material is started at the edge and moved radially toward the substantial center of substrate.

It appears that the Examiner divides this description into two parts, including 1) dispensing of the coating material is started at the edge and 2) moved radially toward the substantial center of substrate.

It appears that the Examiner alleges that part 1 corresponds with the ring shaped dripping step, and part 2 corresponds with the spiral shaped dripping step.

However, part 1 does not show the ring shaped dripping step but simply shows that spiral coating is started from the edge of the substrate. Thus, Blackburn fails to teach or render obvious dripping the coating liquid in a ring shape in the vicinity of an outer circumference on the coating surface of the object to be coated, dripping the coating liquid in a spiral shape toward a geometrical center or an optical center of the object to be coated in the vicinity of the outer circumference and the number of rotations of the object to be coated at the time of dripping the coating liquid in the ring shape, is set to be a smaller value than the number of rotations of the object to be coated at the time of dripping the coating liquid in the spiral shape.

* * * *

In view of the above, claims 1 and 4 are patentable over the applied references. The dependent claims are patentable at least due to their dependence on allowable independent claims 1 and 4 and for the additional features that they recite.

Accordingly, withdrawal of the rejections of the claims is respectfully requested.

III. New Claims 9-20 are Patentable

New claims 9-20 are added. New claims 9 and 20 are patentable at least due to their recitation of similar patentable subject matter to independent claims 1 and 4 and for the additional features that they recite. Claims 10-19 are patentable at least due to their dependence on allowable independent claim 9 and for the additional features they recite.

IV. Conclusion

In view of the foregoing, it is respectfully submitted that this application is in condition for allowance. Favorable reconsideration and prompt allowance of claims 1-20 are earnestly solicited.

Should the Examiner believe that anything further would be desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number set forth below.

Respectfully submitted,



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Attachments:

Petition for Extension of Time
Amendment Transmittal

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